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Abstract

This paper investigates the relationship between tourism specialization and economic growth whilst accounting for the absorptive capacity of host (tourism destination) countries, defined in terms of financial system development. We use the system generalized methods-of-moments (SYS-GMM) estimation methodology to investigate this relationship for 129 countries over the period 1995-2011. The results support the hypothesis that the positive effect of tourism specialization on growth is contingent on the level of economic development as well as the financial system absorptive capacity of recipient economies. Consistent with the law of diminishing returns, we also find that for countries with a developed financial system, at exponential levels of tourism specialization its effect on growth turns negative. Significant policy implications flow from these findings.

Keywords

tourism specialization, absorptive capacity, economic growth, financial development, SYS-GMM

Introduction

Despite the recent economic downturn, tourism remains a large and growing sector of the global economy and - for many countries - the tourism industry represents a key contributor to Gross Domestic Product (GDP) with tourism specialization increasingly being seen as a catalyst for economic recovery and development. Indeed, as noted by Arezki, Cherif, and Piotrowski (2009, 3) “Inspired by a number of success stories attributed to tourism specialization, more and more developing countries, including Sub-Saharan African countries, are contemplating such a strategy in order to emerge from the development trap”.

There has been already much debate in the literature as to whether there is, in fact, a long-run relationship between tourism development (typically measured by tourism arrivals or receipts) and economic growth. At a theoretical level, the positive macroeconomic effects of inbound tourism on the host (destination market) economy are fairly evident. Inbound tourism and associated expenditure represent a consumption stimulus which, in turn, leads to an increase in local production and, consequently, employment. It follows that tourism development should be an obvious determinant of economic growth. Irrespective of the tourism industry’s direct contribution to the balance of payments (BoP), its development also stimulates other sectors of the economy (such as transport, food and beverage services, leisure and entertainment), through direct, indirect and induced effects thus further contributing to economic growth and the BoP, leading to additional consumption, production, employment and higher tax revenues.

However, there are also adverse economic effects associated with tourism development since economies that become over dependent on this sector simultaneously become more susceptible to negative demand-side shocks. Foreign demand for tourism services also leads to higher prices and wages in the host country, which are inflationary. Foreign ownership and factor mobility (across sectors) tend to reduce further the welfare gains from tourism. Since a significant surge in inward tourism flows tends to increase the demand for (consumption of) non-tradable goods (intended as locally-rendered services), the shift of domestic factors of production away from the tradable goods sector may lead to a contraction of the industrial sector (Copeland 1991). Furthermore, tourism can have an undesirable effect on income distribution and create domestic market power distortions that carry further welfare reducing effects (see, among others, Balaguer and Cantavella-Jordá 2002; Hazari and Sgro 2004).

Whilst the empirical evidence in favour of the tourism-led growth hypothesis is mounting (see, *inter alia*, Gunduz and Hatemi 2005; Hye and Khan 2013; Oh 2005; Tang and Tan 2013, 2015; Tosun 1999; and the recent reviews by Brida, Cortes-Jimenez, and Pulina 2014; Castro-Nuno, Molina-Toucedo, and Pablo-Romero 2013; and Pablo-Romero and Molina 2013), conflicting estimates on the actual magnitude of the positive impact of tourism development on growth make it difficult to discern a conventional wisdom, particularly when broader indicators of economic development are taken into account. For example, Cárdenas-García, Sánchez-Rivero, and Pulido-Fernández (2015) recently examined the distinct relationship between the ‘economic growth’ resulting from tourism activity and the effect of the latter on a broader ‘economic development’ construct based on many socio-cultural indicators (including life expectancy, infant mortality rate, adult literacy rate, etc.). Their results, based on a panel of 144 countries over the period 1991-2010, lead them to conclude that tourism-led growth has a positive effect on socio-cultural economic development only in countries with existing high rates of socio-cultural economic development.

The present study focuses on a related yet distinct relationship, that between tourism specialization (a construct that is distinct from tourism development, and commonly defined either as tourism arrivals as a percentage of population or as tourism receipts as a percentage of GDP) and economic growth. Following Lanza (1998), we refer to tourism specialization as a country's deliberate focus on tourism-oriented policies to enhance growth performance (measured in terms of the rate of change of GDP) via concerted investments aimed at stimulating the returns from the development of inbound tourism. This specific relationship is still severely under researched, and the limited evidence that has emerged to date is rather mixed. It is also worth noting that in a seemingly unintentional yet misleading piece of shorthand, some of the literature still treats the relationship between 'tourism development' and growth analogously to the relationship between 'tourism specialization' and growth, making a great deal of confusion. The two relationships are, of course, interrelated but fundamentally distinct as the latter uses a different variable (tourism specialization, by capturing 'tourism intensity', is not the same as tourism development), draws from a different hypothesis and assumptions (law of diminishing returns), and postulates altogether different long-run implications.

Brau, Lanza, and Pigliaru (2004; and 2007) show that the rate of growth of tourism-specializing countries is higher than that of other countries, thereby supporting the findings of the pioneering work by Lanza and Pigliaru (1995). Sequeira and Campos (2007) and Figini and Vici (2010) conclude that there is no robust evidence linking tourism specialization with higher growth. On the other hand, Sequeira and Nunes (2008) and Adamou and Clerides (2010) find a positive impact, though in the latter study such impact is found to occur only at low levels of specialization and to diminish as a country becomes increasingly specialized. Arezki et al. (2009) too find a positive relationship between tourism specialization and economic growth. However, although their sample is based on a large panel of 127 countries, the sample period they consider ends at 2002. Moreover, the instrument they use to measure specialization (which they define as the share of tourism in exports) is based on the number of sites on the UNESCO World Heritage List per country, a rather unconventional indicator which does not lend itself to cross-study comparisons.

Of great importance in this strand of literature are the questions of how much tourism specialization contributes to a country's growth rate, whether such a contribution is contingent on countries' characteristics (for example, in terms of economic size and level of development), and whether there are limits to the extent to which tourism specialization adds to a country's growth rate as increasing levels of specialization are achieved. The core issue underlying the latter question hinges on the theory of diminishing returns, which can easily be applied to the production costs of the tourism industry. For instance, the development of a tourism destination is expected to lead to a rise in wages which, in turn, is likely to increase the price of tourism services. Hence, over time, a country specializing in tourism may incur a loss of competitiveness as its national income rises, with the resulting contribution of the sector to the overall economy's growth rate consequently expected to experience diminishing returns.

To our knowledge, to date, no study has investigated the growth effects of tourism specialization while controlling for the recipient countries' level of 'absorptive capacity' in terms of their level of financial system development. This is striking since it is reasonable to postulate that tourism specialization, just like industrial development from other forms of foreign investment inflows, may require at least some financial sector development (alongside human capital and physical infrastructure) to have a substantial and sustained effect on a country's rate of economic growth.

It is, of course, true that as Adamou and Clerides (2009) suggest, even small countries can, if endowed with suitable natural, historic or artistic resources and attractions, develop successful tourism sectors (see also Croes 2013). Yet we would argue that the public and private (domestic and foreign) capital investment required for a growth-enhancing expansion of the tourism industry (including expenditure for the provision and maintenance of additional roads, airports, sanitation, energy, water, etc.) at a scale that would allow such countries to ascend global income rankings is quite substantive, and only achievable as a result of a well established financial system (alongside a deliberate long-term policy decision) capable of supporting these countries' absorptive capacity from inbound tourism, hence facilitating the growth-enhancing effects to be accrued from tourism specialization.

The foreign direct investment (FDI) literature has already documented the role of financial development in enhancing absorptive capacity and economic growth of recipient economies (Alfaro, Chanda, Kalemli-Ozcan, and Sayek 2004; Durham 2004; Hermes and Lensink 2003). Yet there is no evidence available from which to ascertain neither the role of absorptive capacity (as defined by these canonical sources) on the relationship between tourism specialization and economic growth nor the extent to which countries with more developed financial systems can exploit development from inbound tourism more efficiently. The present study aims to fill these glaring gaps in the literature.

Accordingly, our principal aim is to investigate 'how much' tourism specialization contributes to economic growth, and whether there are economic development constraints or diminishing returns limitations to this effect, by estimating the long-run elasticity between tourism specialization and GDP growth whilst controlling for the level of economic development and financial absorptive capacity of the 129 countries in our sample over the period 1995-2011.

Our contribution is also distinguished by the specification of a comprehensive model that includes variables identified as key determinants in both the endogenous growth and the tourism-led growth literature, and which draws from publicly available databases (e.g., The World Bank World Development Indicators) as well as tourism proprietary data acquired from the United Nations World Tourism Organization Statistics (http://statistics.unwto.org/en/content/general-publications-statistics).

Another merit of the present study lies in its methodological approach. The few studies on the subject have used traditional panel estimation techniques that carry non trivial disadvantages. We employ instrumental variable estimation of a simultaneous panel data model based on the system generalized methods-of-moments (SYS-GMM) method proposed by Arellano and Bond (1991), Arellano and Bover (1995), and Blundell and Bond (1998), which extends the well known GMM estimation technique developed by the Nobel Prize Laureate Lars Peter Hansen (1982). In addition to accounting for the underlying dynamics and individual country-specific effects, SYS-GMM corrects for potential problems stemming from the correlation between the regressors and the error term, small-sample bias, measurement error and endogeneity.

Tourism Specialization, Absorptive Capacity and Economic Growth

The financial system is essential to the workings of a modern economy. It is often described in textbook literature as the complex set of institutions - including banks, other financial intermediaries, the government, as well as national and international institutions and financial markets - that in addition to channelling household savings to the corporate sector for the purpose of financing the growth of industries, facilitates payments linking lenders to investors, domestic as well as international (Allen and Gale 2001). As noted by Allen and Oura (2004, 97), these channels “are the sources connecting financial development and financial structure to economic growth”.

Thanks to these functions, the financial system can be regarded as essential for the viability of the development of any industry, catering for a myriad of remits including the disbursement of investment capital, the distribution of associated risks, money transfers, payment for inputs in the production process and money collection. It bears reminding that all such activities require financial system development in order to be sustained. For instance, if investment capital is not disbursed, any productive or entrepreneurial venture would suffer. Moreover, as noted earlier, tourism specialization also stimulates other sectors of the economy through direct, indirect and induced effects that further augment the volume of financial transactions related to additional investment, production, import/export activity and expenditure.

Since all such activities require adequate financial absorptive capacity by the tourism destination market, financial development can be seen as an essential element to facilitate the host country’s growth-enhancing effects accruing from tourism specialization. It is on the basis of this logic that, by supporting the efficient allocation of resources, financial development is thought to improve the “absorptive capacity” of a country (see Alfaro, Chanda, Kalemli-Ozcan, and Sayek 2004; Durham 2004; Hermes and Lensink 2003). On this account, following this seminal literature, and given our tourism context, we use the term ‘absorption’ as the financial system capacity to assimilate inbound tourism, with ‘absorptive capacity’ denoting the maximum level of tourism specialization that can be assimilated by an economy before reaching the inflection point at which the growth enhancing effects of specialization begin to experience diminishing returns.

Methodology and Data

Early empirical work investigating the relationship between tourism and growth did so using standard OLS techniques that are susceptible to the well known spurious regression problem (e.g., Ghali 1976). The relatively few studies that have used panel methods (for example, Eugenio-Martin, Morales, and Scarpa 2004; Proença and Soukiazis 2008; but see also the useful review by Castro-Nuno, Molina-Toucedo, and Pablo-Romero 2013) have, by and large, used traditional panel estimators that as noted by Lee and Chang (2008) have the disadvantage of being incapable to account for the underlying dynamics irrespective of whether the series are time-averaged. Indeed most panel estimation techniques carry disadvantages that make them unsuitable for testing the hypotheses at hand within a large cross-country data panel.

The pooled OLS estimator does not deal with either country-specific effects across the panel or endogeneity bias. The random effects estimator relies on strong homogeneity assumptions and its specification has already been rejected in the context of the relationship in question in favour of the fixed effects estimator (see Adamou and Clerides 2010). The fixed effects estimator corrects for individual country-specific effects but overlooks the risk of endogeneity bias. The standard GMM estimator controls for measurement errors and endogeneity but does not account for unobservable country-specific effects and can be vulnerable to imprecision due to small-sample bias. On the other hand, the SYS-GMM estimator that we employ, thanks to its variables instrumentation, first-difference transformation and simultaneous combination of moment conditions for both the level and first-difference equations, accounts for the underlying dynamics of the data generation process whilst also dealing with country-specific effects, measurement error and endogeneity bias. Controlling for the latter is paramount when investigating the relationship between tourism specialization and growth since as found by Dritsakis (2004) for Greece, Kim, Chen, and Jang (2006) for Taiwan, Lee and Chang (2008) for a sub-sample of non-OECD countries, and Chen and Chiou-Wei (2009) for South Korea, tourism activity and growth are likely to be simultaneously determined with bidirectional causality running between them. The adoption of the SYS-GMM approach, therefore, allows us to place considerable confidence on the reliability of the results even in the event in which such feedback effects apply. Furthermore, SYS-GMM resolves some of the small-sample biases of the standard GMM estimator without imposing particularly strong assumptions (see Blundell and Bond 2000; Bond and Windmeijer 2002; Baltagi 2005).

Our baseline econometric model specification is:

$$y_{i,t} = \sum_{k=1}^{p} \beta_k y_{i,t-k} + \theta'(L)\chi_{i,t} + \gamma_t + \alpha_i + \nu_{i,t} \quad \text{for } i = 1, \ldots, \text{N, and } t = p+1, \ldots, \text{T}_\text{i} \qquad (1)$$

where $y_{i,t}$ is the logarithm of per capita GDP (of country *i* at time *t*), $\chi_{i,t}$ is a vector of growth determinants discussed below, including the tourism specialization variable of interest, $\theta(L)$ is a vector of associated polynomials in the lag operator, *p* denotes the maximum lag length, γ_t reflects the country invariant time-specific effects to capture common disturbances across the units of the panel, α_i represents the unobservable individual country-specific effects, $\nu_{i,t}$ denotes transient errors expected to be serially uncorrelated, and the β's and θ's are the parameters to be estimated.[1]

The first-difference transformation of equation (1) gives:

$$\Delta y_{i,t} = \sum_{k=1}^{p} \beta_k \Delta y_{i,t-k} + \theta'(L)\Delta\chi_{i,t} + \gamma_t + \nu_{i,t} \qquad (2)$$

Note that the above transformation deals satisfactorily with unobservable individual country-specific effects (α_i in equation 1).

The moment restrictions (m = ½ (T – 1) (T – 2)) exploited by the standard first-differenced GMM estimator of Arellano and Bond (1991) use T–2 equations in lagged levels as instruments for the equations in first differences. This yields a consistent estimator of β as $N \rightarrow \infty$. However, this first-differenced GMM estimator has been found to have poor finite sample properties, in terms of bias and imprecision in the case in which the series are highly persistent or if the variance of the individual specific effect is large relative to the variance of the remainder of the error term (see Blundell and Bond 1998). In these circumstances the lagged levels of the series are only weakly correlated with subsequent first differences, thus leading to weak instruments for the first-differenced equations. Instrument weakness, in turn, increases the variance of the coefficients and, in relatively small samples, is likely to generate biased estimates. Arellano and Bover (1995) and Blundell and Bond (1998) demonstrate that the SYS-GMM approach permits the simultaneous estimation of equations (1) and (2) under two sets of moment conditions:

$$\mathrm{E}\left(\mathrm{Z}'_{\mathrm{ij}}\Delta\nu_{\mathrm{ij}}\right) = 0 \qquad (3)$$

$$\mathrm{E}\left(\mu_{\mathrm{ijt}}\Delta y_{\mathrm{ij,t-1}}\right) = 0 \qquad (4)$$

where Z_{ij} is the (T – 2) × m instrument matrix (m denotes the size of moment restrictions), $\Delta\nu_{\mathrm{ij}}$ and Δy_{it} are (T – 2) vectors of standard and additional system GMM moment conditions, and μ_{ijt} is the population mean of y. The SYS-GMM estimator, therefore, combines - in a stacked system - the standard set of (T − 2) equations in first differences with suitably lagged levels as instruments with an additional set of (T − 2) equations in levels with suitably lagged first differences as instruments. These additional moment restrictions permit lagged first differences to be used as instruments in the levels equations (Blundell and Bond 1998).

Since such a proliferation of instruments may overfit endogenous variables and lead to a loss of power, following much of the relevant applied literature we restrict the maximum lag length of the lagged instruments to three (though the results did not prove to be particularly sensitive to the choice of alternative maximum lag lengths).[2]

As illustrated by Roodman (2009), the validity and reliability of SYS-GMM estimation relies heavily upon two main assumptions. The first is that the instruments are exogenous, an assumption that can easily be tested on the instruments over-identifying restrictions using the standard Sargan/Hansen test statistics for the null hypothesis of instrument validity. The second assumption is that there is no second-order serial correlation, the verification of which can be undertaken by applying the Arellano and Bond (1991) AR(2) serial correlation test to the residuals in differences.

We compiled annual data for 129 countries for the period 1995-2011 (a full description of all the variables and associated data sources is reported in Appendix A) [3], and run the regressions using the software *GAUSS 3.0* (the dataset is available from the authors by request). Economic growth, for each country in our sample, is measured as the growth rate of real per capita GDP, based on purchasing power parity (PPP). Real per capita GDP is preferred to real GDP in order to maintain strict adherence to the variable used in Adamou and Clerides (2010), the only previous study that also reports estimates of the inflection point at which the growth-enhancing effect of tourism specialization begins experiencing diminishing returns. Moreover, taking the *rate of growth* (from one differenced period to the next) rather than level of GDP per capita reduces the significance of any bias in this variable stemming from the influence of cross-borders workers' contribution to GDP, which may overstate the level of GDP per capita given that cross-border workers are not included in the population.

The independent variables are the lagged value of the dependent variable, tourism specialization, investment as well as government consumption (both expressed as a percentage of GDP), inflation, population growth, school enrolment, trade openness, political stability, and financial development.

Tourism specialization is measured by tourism arrivals as a percentage of population in basis point. Tourism arrivals data (from WTO) refer to non-resident visitors (overnight as well as same day visitors) on an inbound tourism trip (our measure excludes travellers such as seasonal or short-term workers as well as long-term students). Given that across a large country sample WTO tourism arrivals data may record some inconsistencies due to the way different reporting countries mix border arrivals and hotel arrivals in their data collection and computation methodologies, like Adamou and Clerides (2010) we also use inbound tourism expenditure as a percentage of GDP to construct an alternative measure of tourism specialization for the purpose of sensitivity/robustness tests.

Consistent with the new gross fixed capital formation measure employed by The World Bank (see http://data.worldbank.org/indicator/NE.GDI.FTOT.ZS), the investment variable includes: land improvements; plant, machinery and equipment purchases; and the construction of roads, railways, and other public investments such as schools, hospitals, and commercial and industrial buildings.

Following the unit of measurement typically employed in the literature testing growth models, the government consumption variable (expressed as a percentage of GDP) is derived from the general government final consumption expenditure for purchases of goods and services.

Inflation indicates the economy-wide rate of change in the overall level of prices (for each individual country) and is calculated from the annual growth rate of the GDP implicit deflator. The latter (measured as the ratio of GDP in current local currency to GDP in constant local currency) is taken from the World Bank national accounts data and OECD National Accounts data files (http://data.worldbank.org/indicator/NY.GDP.DEFL.KD.ZG/countries/HT-xj?display=graph). Although our dependent variable is already in real terms, following Kyaw and MacDonald (2009) we include inflation as a regressor also to capture the commitment of policy makers to economic stability and as a proxy for the user cost of capital instead of using the interest rate as the latter has usually been fixed in many developing countries in our sample.

The population variable is expressed as the annual growth rate of total population. The measure is taken from The World Bank World Development Indicators and it is based on the *de facto* definition, which includes all residents irrespective of legal status or citizenship (except for refugees who have not yet been given asylum).

School enrolment (in net percentage) is a human capital indicator used as a proxy for the level of educational development and, as per the UNESCO Education Indicators technical guidelines, is computed as "secondary school enrolment divided by the size of the population age group that officially corresponds to the secondary level of education"
(see http://www.uis.unesco.org/Library/Documents/eiguide09-en.pdf)

The trade variable is used, as in much of relevant literature (see, for example, De Vita 2014), as a proxy for the degree of international openness, and reflects exports plus imports as a percentage of GDP.

The variable 'political stability and absence of violence/terrorism' reflects the quality of governance, and it is based on an index measure constructed from the Worldwide Governance

Indicators (see http://info.worldbank.org/governance/wgi/pdf/pv.pdf). The index is representative of perceptions of the likelihood of political instability and/or politically motivated violence, including terrorism.

With respect to financial development, the measure chosen captures a broad coverage of a country's financial depth which comprises money and quasi money. In defining money and quasi money (generally referred to as 'M2'), data and definition used are those of the World Bank which correspond to the IMF International Financial Statistics (IFS, lines 34 and 35) and include "the sum of currency outside banks, demand deposits other than those of the central government, and the time, savings, and foreign currency deposits of resident sectors other than the central government" (http://data.worldbank.org/indicator/FM.LBL.MQMY.IR.ZS). We regard the range of this widely adopted measure of a country's financial depth (see, for example, Calderón and Liu 2003) as ideal to generate a broad and consistent indicator of financial development across such a wide panel of countries.

In order to establish whether the growth-boosting effect of tourism specialization varies at different levels of financial absorptive capacity, countries in our sample have also been disaggregated into low versus high financial development groups. This disaggregation is undertaken using an alternative yet equally reliable proxy for financial development (in addition to that used as a regressor) based on the average capital account openness index (from Chinn and Ito 2006). Using this measure, our calculations found that there are 62 countries within our sample in the high financial absorptive capacity group with higher than the average capital account openness level while there are 67 countries in the low financial absorptive capacity group with lower than the average capital account openness level.

Countries classified within the high financial absorptive capacity group are: Armenia, Australia, Austria, Belgium, Bolivia, Botswana, Canada, Chile, Costa Rica, Croatia, Cyprus, Czech Republic, Denmark, Djibouti, Ecuador, Egypt, El Salvador, Estonia, Germany, Greece, Guatemala, Hong Kong, Hungary, Iceland, Indonesia, Israel, Italy, Jamaica, Japan, Jordan, Kenya, Kuwait, Kyrgyz Republic, Latvia, Lebanon, Lithuania, Maldives, Mauritius, Mexico, Mongolia, Netherlands, New Zealand, Nicaragua, Norway, Oman, Panama, Paraguay, Peru, Portugal, Romania, Saudi Arabia, Slovenia, Spain, Sweden, Switzerland, The Gambia, Uganda, United Arab Emirates, United Kingdom, United States, and Uruguay. Countries within the low financial absorptive capacity group are: Albania, Algeria, Argentina, Azerbaijan, Bangladesh, Barbados, Belarus, Belize, Benin, Bhutan, Bulgaria, Burkina Faso, Burundi, Cambodia, Cameroon, Cape Verde, Central African Republic, Chad, China, Colombia, Comoros, Congo, Côte d'Ivoire, Dominican Republic, Ethiopia, Gabon, Ghana, and Guinea.

Countries in the sample are also disaggregated into three different income categories (low-, middle-, and high-income groups) based on gross national income (GNI) per capita calculated using the most recent World Bank Atlas classification method (see http://data.worldbank.org/about/country-and-lending-groups#Low_income). Whilst no single index can be said to summarize a country's level of economic development, GNI per capita has proven to be a useful indicator in the literature, particularly for international comparisons, and remains the economic development measure of choice by The World Bank as it has been found to be highly correlated to other nonmonetary measures of the quality of life such as life expectancy at birth and mortality rates of children (which we, therefore, do not include as regressors). The income category thresholds are: low income, $1,045 or less; middle income, $1,046 - $12,735; and high income, $12,736 or more.

Empirical Results

Table 1 provides a first pass at the data by reporting some relevant descriptive statistics. Tourism specialization averages 0.09 basis point over the panel, with a large variance and a spread of mean values ranging from 0.00 basis point for the case of Bangladesh, to an impressive 3.17 basis point for the case of Slovenia.[4] The mean of real GDP per capita over the sample is 14,683 US$ with a range across countries exceeding 90,000 US$. Economic growth also displays considerable variations across the panel. Countries' mean growth rates over the sample period range from -3.75% (United Arab Emirates) to 10.56% (Azerbaijan). Significantly, we find that 5% of the countries average negative growth over the sample period. Finally, as reported in Table 1, our measure of financial development reveals substantive differences across countries ranging from 11.22 in Chad to 247.58 in Hong Kong.

Table 1 here

Evidently, the sheer size of the entire range of our data panel precludes us from providing a diagrammatic representation over time from which to gauge how the cross-sectional variation in the data translates into patterns from which to discern the relationship between specialization and growth, let alone the moderating role of financial absorptive capacity. It is for this reason that we now proceed to the presentation of the most critical diagnostics of the SYS-GMM estimations and of the regression results.[5]

Table 2 here

Table 2 summarizes the results of the Sargan test for the validity of the over-identifying restrictions of the SYS-GMM instruments, and of the Arellano-Bond AR(2) serial correlation test. With regard to the former, the *p*-values indicate the probability of spuriously rejecting the null hypothesis of instrument validity, with a *p*-value higher than 0.05 signaling that the probability is above 5%. As shown from Table 2, the test results demonstrate the independence of the instruments from the residuals and hence that they are healthy instruments. The Arellano-Bond AR(2) serial correlation test results confirm that since the differenced residuals display no evidence of second-order serial correlation, we can safely take the proposed specification under its instrumental variable structure as adequate for valid inference.

Following Bloom, Bond and Van Reenen (2001), in each table of our SYS-GMM regression results that follow, we also report a goodness of fit measure computed as the squared correlation between the predicted level of the growth rate of real per capita GDP and the actual growth rate of real per capita GDP [Corr. $(y, \text{fitted } y)^2$].

Tables 3 and 4 here

The results from the SYS-GMM estimations are presented in Table 3. For the countries in our sample, a 1% increase in tourism specialization leads, on average, to an increase of 0.59% in their rate of real per capita GDP growth, and the estimated coefficient is statistically significant at customary significance levels. This finding is in stark contrast to the lack of evidence of a link between tourism specialization and growth suggested by Sequeira and Campos (2007) and Figini and Vici (2010) but compares favourably to the results reported by Sequeira and Nunes (2008) and Adamou and Clerides (2009; and 2010).

Although our interest in this paper centres on the role of tourism specialization, the other explanatory variables (essentially included as 'controls' in our comprehensive model specification) have the expected sign. For instance, government consumption expenditure exhibits a statistically significant negative correlation with growth (the estimated coefficient is -0.0004), while investment (0.0057), the human capital measure (0.0020), trade openness, and political stability display a positive link with growth (though trade openness and political stability do not prove to be statistically significant). The inflation estimated coefficient has the expected negative sign and is statistically significant though the magnitude of the elasticity is negligible (-0.0001). This result would suggest that aside from the real price effects already accounted for in our model by expressing the dependent variable in real terms, monetary policy plays a very marginal influence on the rate of growth of real GDP per capita. Most importantly, our measure of financial development shows a positive and significant effect on the rate of growth of per capita GDP, although the magnitude of the estimated coefficient is very small (0.0002). Overall, the relatively small elasticities of several estimated coefficients of our independent variables may be rationalized on the basis of both, the fact that our dependent variable relates to the rate of growth of (real) per capita GDP rather than its level, and that much of the influence of these explanatory variables could be subsumed under the estimated coefficient of the lagged growth rate, which is positive, highly significant statistically, and records the largest elasticity (0.9517).

It is useful at this point to assess the extent to which the established growth-enhancing effects of tourism specialization vary according to countries' level of traditionally defined economic development, typically measured by per capita GNI. Accordingly, the economies in our sample are disaggregated into low-, middle-, and high-income groups. The estimation results reported in Table 4 show that the impact of tourism specialization on growth does vary across countries at different levels of economic development, with countries in the middle- and high-income groups gaining more in terms of growth performance from specialization than those in the low-income group. Specifically, all coefficients are positive and highly statistically significant though the parameter estimate relating to the low-income group (0.0013) is considerably smaller than those of medium- and high-income countries (0.0354 and 0.0259, respectively). In other words, in the case of middle- and high-income countries an increase in tourism specialization by 1% is associated with an increase in the growth rate of real per capita GDP of 3.54% and 2.59%, respectively, but in the case of low-income countries the resulting increase in the growth rate of real per capita GDP reduces to 0.13%.

Of particular importance in these regression results is also the change in statistical significance of the coefficient of financial depth across income groups, since the impact of this variable is now only statistically significant for the high-income group (same elasticity as that reported in Table 3), with a *p*-value of 0.00001. Hence, despite the conventional view that low-income countries are likely to experience greater growth performance from tourism specialization than higher income countries, our results suggest that when the financial development variable is accounted for, a new picture emerges.

These findings appear to contribute to the related debate (Adamou and Clerides 2009; Candela and Cellini 1997; Croes 2013; Lanza and Pigliaru 1995, and 2000; Vanegas and Croes 2003; etc.) of whether tourism as a development strategy can help small economies overcome the constraints posed by economic size, and possibly even allow them to outperform larger economies, as our evidence makes it all too apparent that small economic size, in terms of both economic and financial development, does not, in itself, grant any advantages in terms of tourism-led prosperity. That said, it is worth noting that this result does not override previous findings on the important role that tourism and tourism specialization can play in the economic development of small islands (for an insightful analysis of which we refer readers to Croes 2013). On this account it should be highlighted that only very few of such islands feature in the low-income countries sub-sample and that the high- and middle-income countries sub-samples –

which include among others Cyprus, Mauritius, and Maldives - have a higher positive coefficient of tourism specialization compared to the low-income countries. Significantly, disaggregation of our sample by low-, middle- and high-income groups, also reveals that the positive effect of financial depth on growth is only statistically significant for the high-income group, possibly suggesting that many of the countries that feature in the low-income sub-sample are economically poor also because they lack the financial capacity to spur their economies.

In terms of additional comparisons to previous findings, it is worth noting that Sequeira and Nunes (2008) find that tourism specialization contributes to growth, both in their full sample and in a sub-sample of poor countries. It also bears reminding that for ‘tourism development’ (rather than ‘tourism specialization’), several studies have found a similar pattern (e.g., Sinclair and Stabler 1997; and Eugenio-Martin et al. 2004) when disaggregation according to countries’ income level is undertaken in estimation. However, the contrasting results are likely to be due to the inherent difference between the constructs of tourism development and specialization, the advantages of employing the more reliable SYS-GMM estimation approach, and the less comprehensive model specification adopted in previous studies, including the lack of consideration of financial development as a growth determinant.

Tables 5 and 6 here

As a robustness test, we also investigated whether the results obtained are sensitive to the choice of measure used for tourism specialization by replacing the measure constructed as tourism arrivals as a percentage of population with tourism receipts as a percentage of GDP. As shown in Table 5, the results obtained from this permutation are broadly analogous to those reported in Table 4.

Our analysis would not be complete without investigating two additional critical issues. Having established that financial depth is itself a determinant of growth, the first issue concerns seeking confirmation that financial development also plays a moderating role in the relationship between tourism specialization and growth. Specifically, the first question we pose is ‘does the relationship between tourism specialization and growth as well as financial depth and growth, differ across countries at different levels of financial absorptive capacity?’ The second issue pertains to the question of whether the potential growth-boosting effect of tourism specialization varies at different levels of specialization. The latter question can be investigated by means of the inclusion of the squared tourism specialization measure as an additional regressor (as in Adamou and Clerides 2010).

The results pertaining to the above extensions are presented in Table 6, which reports estimates disaggregated according to different financial absorptive capacity levels for the sample countries as gauged by the level (low or high) of our alternative measure of financial development based on the Chinn-Ito average capital account openness index. Looking first at the coefficients for tourism specialization, this variable is only significant for the group of countries with high absorptive capacity (with an incidence on the rate of growth of real per capita GDP of 9.62% per one percent change in tourism specialization). This result provides strong empirical support to the hypothesis that the positive effect of tourism specialization on growth is also contingent on the financial absorptive capacity of recipient (host market) economies.

Consistent with the law of diminishing returns, the results reported in Table 6 also indicate that the growth-boosting effect of tourism specialization for countries with high levels of absorptive capacity is not constant. Specifically, the coefficient of squared specialization proves to be statistically insignificant in the case of countries with low absorptive capacity but it is significant and with a negative sign in the case of countries with high absorptive capacity (-0.0045). As found by Adamou and Clerides (2010), therefore, we too observe that when the tourism specialization variable is singularly included in the regression it is positive and statistically significant (though only for countries with high financial absorptive capacity in our disaggegrated analysis) but when the squared specialization variable is added, both estimated parameters are significant, signalling that the relationship is nonlinear (a concave function to be precise), and that at exponential levels of tourism specialization, the effect of the latter on growth turns negative.

Our estimates of the two specialization coefficients (for the base and squared terms) imply that the GDP growth rate is 'maximized' (that is, before beginning to experience diminishing returns) when tourism specialization reaches 10.7%.[6] When the level of tourism specialization exceeds this threshold (inflection point), inbound tourism continues to rise but its contribution to growth experiences a decline. This confirms that even for countries with a high level of financial absorptive capacity, at high levels of tourism specialization the contribution to the economy's growth rate exhibits diminishing returns. This may possibly also be caused by the well known productivity problems of tourism, for example in terms of introducing large scale technology to address critical issues such as the staff to output ratio that still makes the tourism industry stand out vis-à-vis other economic sectors.

Adamou and Clerides' (2010) fixed effects results when the lagged growth rate of per capita GDP term is instrumented using lags (which they take as their best specification to estimate the inflection point for tourism's contribution to economic growth) lead them to conclude that the growth rate is maximized at a specialization level of 20.8% (when using no instrumentation, their estimated coefficients imply that the growth rate is maximized at a specialization level of 36.4%), hence a significantly higher, and statistically different inflection point than the one we find.[7] However, they used a basic fixed effects estimation method which by failing to account for endogeneity and the likely feedback effects between tourism specialization and growth may carry non-trivial biases. Furthermore, they took tourism receipts as a percentage of GDP as their specialization measure (their 'tourism arrivals over population' measure proved to be insignificant), used three-year intervals of per capita GDP rather than annual data, and their estimations did not account for the absorptive role of countries' financial development (or the level of economic development).

Conclusions

That inbound tourism contributes to a country's economic growth has become a stylized fact of the literature but whether specializing in the tourism industry to enhance a country's GDP growth performance is subject to diminishing returns and whether there are limits to the growth-enhancing effects of tourism specialization stemming from a country's level of financial absorptive capacity have remained largely unanswered questions. In this paper we addressed these questions empirically by employing a SYS-GMM estimation technique on a large panel covering 129 countries for the period 1995-2011.

Controlling for a comprehensive set of well-established growth determinants, our empirical results lead us to significant insights. First, although the relationship between tourism specialization and economic growth is found to be positive and significant for all the countries in our sample, middle- and high-income countries appear to gain considerably more from tourism specialization than low-income countries. Similarly, we find that the positive effect of financial depth on growth is only statistically significant for the high-income group of countries.

Our data also show that the growth-enhancing effect of tourism specialization accrues to countries with a more developed financial system capable of supporting these countries' absorptive capacity from inbound tourism. Moreover, for such countries, consistent with the law of diminishing returns, tourism specialization adds to the rate of economic growth but at a diminishing rate. In other words, at high levels of specialization (that we estimate at 10.7%), its impact on GDP growth begins to decline.

The main implication of our findings is that since the growth performance advantages from specialization accrue mostly to countries with a high level of economic development and financial absorptive capacity, tourism specialization oriented policies, especially given their resource diversion implications, should be pursued only by such countries, and only up to the point at which the contribution of specialization to growth begins experiencing diminishing returns.

Despite the value of our findings, two final caveats are in order. First, although the two measures of tourism specialization that we employ are the ones most commonly adopted in relevant literature (see, among others, Adamou and Clerides 2009, and 2010; Brau et al. 2004, and 2007; Croes 2013; Figini and Vici 2010), adhere to our definition of the construct, and show consistent results in estimation, it needs to be acknowledged that there is no established consensus on either the definitional boundaries of tourism specialization or its empirical operationalization. In light of this, a profitable avenue for future research could entail conducting a deeper conceptualization of the construct, possibly with the aim of extending it – in line with trade theory - to incorporate also a relative dimension vis-à-vis other sectors of economic activity.

This approach would also provide a theoretical grounding for the adoption of additional measures that may include, for example, relative market shares of tourism service exports versus exports of manufactured goods or agricultural produce; advantages and limitations of each measure notwithstanding.

Second, although we introduced nonlinearities in our regression through the inclusion of the squared tourism specialization term in order to test whether its growth-boosting effect is susceptible to diminishing returns, future studies may consider further the possibility of non-linear dependencies of the other independent variables and/or the non-linear causal properties in the relationships characterizing the growth model in question.

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Appendix A. Description of Variables and Data Sources

Variables	Description	Source
GPC	Rate of growth of real GDP per capita	World Bank, World Development Indicators (WDI)
TA	Tourism arrivals	United Nations World Tourism Organization (WTO)
TE	Tourism expenditure	WTO
TS	Tourism specialization	Derived from TA as a percentage of population; and as TE as a percentage of GDP
Inv	Investment as a percentage of GDP	World Bank national accounts data and OECD National Accounts data files
GC	Government consumption as a percentage of GDP	International Monetary Fund (IMF), International Financial Statistics (IFS)
SE	School enrolment	United Nations Educational, Scientific, and Cultural Organization Institute for Statistics
Trd	Trade openness as a percentage of GDP	IMF, Trade database
Inf	Inflation (based on GDP deflator measured as the ratio of GDP in current local currency to GDP in constant local currency).	World Bank national accounts data and OECD National Accounts data files
PopG	Population growth in annual percent	World Bank, WDI
PS	Political stability and absence of violence/terrorism index	World Governance Indicators
FD	Measure of financial development (money and quasi money as a percentage of GDP)	World Bank national accounts data and OECD National Accounts data files
FAC	Alternative measure of financial system development to proxy financial absorptive capacity based on the average capital account openness index (Chinn and Ito, 2006)	Chinn and Ito (2006)

Notes

1. Our number of countries (N) is 129, which constitutes a large proportion of the population of world countries, and a sample (not census) selected on the basis of sufficient data availability and tourism activity (some countries had very short series). Given this, our choice of a fixed effects model over random effects seems plausible especially given our preference to avoid introducing the inevitable bias in the estimates inherent in the use of random effects, possibly at the cost of a larger variance of those estimates under fixed effects estimation.
2. Instruments for the differenced equation include the first lag of growth, the first and second lag of investment, and first lag of tourism specialization. Instruments for the level equation include the first and second lags of the growth variable, the first and subsequent lags of the investment variable and first and second lag of tourism specialization. GMM-type instruments for the level equation include the lagged first differences of the aforementioned variables.
3. The gains of the SYS-GMM estimation method that we employ (Arellano and Bover 1995) relative to the traditional first-differenced GMM estimator (Arellano and Bond 1991) are more pronounced when the panel units (N) are large and the time periods (T) are moderately small. Given that we have relatively few time periods in our dataset (T = 17) and many units in our panel, with a size of N almost 8 times larger than T, SYS-GMM suits our dynamic panel model well (for studies suitably employing SYS-GMM when T is equal to or larger than 17, see, among others, Abbott, Cushman and De Vita 2012, and Crivelli and Gupta 2014).
4. Based on the 2010 'Promotion of Tourism Development Act' of the Republic of Slovenia, the Ministry of Economic Development and Technology of the Government of the Republic of Slovenia, charged with the drafting of the proposal for the Slovenian Tourism Strategy, at their

81st regular session, dated 11 May 2010, ruled as follows: "The Government of the Republic of Slovenia defines tourism as one of the most important economic or strategic sectors that generates new jobs and has an extremely positive impact on balanced regional development. [..] In the years to come and in light of the present level of development of Slovenian tourism and the existing development potential, tourism will become one of the leading industries of the Slovenian economy and will hence make a significant contribution to the attainment of Slovenia's development goals and, within this frame, to the attainment of its economic objectives, such as competitiveness, GDP growth, employment growth, sustainable development, regional development, greater quality of life and well-being of its population, reinforcement of cultural identity and increase of Slovenia's recognition in the world. [..] Tourism is and will be an important economic activity with a number of multiplicative effects." (Vučković et al. 2012, 16-19). Tourism in Slovenia already creates over 12% of GDP, and accounts for over 40% of services export in the BoP. This evidence provides reassurances that the finding regarding Slovenia is based on a measurement index that adheres to the concept of tourism specialization as defined by the study.

5. In the preliminary phase, we also performed some checks on the time series properties of the series in first difference by testing for unit roots since the estimated coefficients can be spurious in the presence of non-stationarity. Given the nature of our panel, i.e., $N > T$, we use the Levin, Lin, and Chu (2002) panel unit root test based on the specification: $\Delta y_{i,t} = \rho_i y_{i,t-1} + e_{i,t}$, where ρ is the autoregressive parameter; e is the error term, $i = 1, 2, \ldots, N$; and $t = 1, 2, \ldots, T$. Under the null $\rho = 0$, the adjusted t-statistic has a standard normal distribution. We found all the series to be first-difference stationary (results, not reported to conserve space, are available from the authors upon request).

6. Growth is maximized when the derivative with respect to the tourism specialization term (TS) is $\delta growth/\delta_{TS} = 0.0962 - 2 \times 0.0045$, which gives $\delta growth/\delta_{TS} = 0 \rightarrow \delta_{TS} = 10.7$.
7. The inflection points of the growth enhancing effects of tourism specialization computed by Adamou and Clerides (2010) and ourselves (20.8%, 10.7%), are based on the respective point (parameter) estimates (-0.000094, -0.0045) that have an associated confidence interval (*CI*) for the average effect. To verify whether the two underlying point estimates are, in fact, statistically different, we considered the 95% *CI* for the difference between the two point estimates computed as: $CI = [(p_1 - p_2) \pm 1.96 \times \sqrt{(p_1^2 + p_2^2)}]$. Since such interval (0.07195, 0.01617) does not contain zero, we reject the null hypothesis that the point estimates are the same.

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Table 1. Descriptive Statistics.

Variables	Mean	Standard deviation	Minimum	Maximum
Tourism arrivals in thousands	8,675	19,590	13.629	107,753
Tourism specialization (tourism arrivals as a percentage of population, basis point)	0.09	0.31	0.00	3.17
Real GDP per capita	14,683	16,290	593	93,901
Investment as a percentage of GDP	21.83	5.61	8.38	48.18
Government consumption as a percentage of GDP	13.05	7.46	0.45	31.12
School enrolment (net rate)	71.23	30.49	9.38	143.49
Trade openness as a percentage of GDP	84.03	40.75	24.43	334.02
Inflation (GDP deflator)	13.81	50.75	1.30	522.61
Population growth (annual percentage)	1.48	1.23	-0.74	8.15
Political stability and absence of violence/terrorism index	-0.09	0.88	-2.43	1.34
Financial depth (money and quasi money as a percentage of GDP)	59.35	45.96	11.22	247.58

Table 2. Instrument Validity Test and Serial Correlation Test

Sargan's instrument validity test	
Income classification	
Low-income countries	16.058 (p = 0.852)
Middle-income countries	31.924 (p = 0.328)
High-income countries	27.163 (p = 0.690)
Arellano-Bond AR(2) second-order serial correlation test	
Income classification	
Low-income countries	0.896 (p = 0.735)
Middle-income countries	0.320 (p = 0.529)
High-income countries	0.578 (p = 0.941)

Table 3. SYS-GMM Results.

Variables	Coefficient
Lagged growth rate	0.9517 (0.00001)
Tourism specialization	0.0059 (0.00216)
Investment	0.0057 (0.00433)
Government consumption	-0.0004 (0.00001)
Inflation	-0.0001 (0.01344)
Population growth	-0.0017 (0.09395)
Secondary education	0.0020 (0.00071)
Trade	0.0003 (0.48606)
Political stability and absence of violence/terrorism	0.0098 (0.63929)
Financial depth	0.0002 (0.01082)
Corr. (y, fitted y)^2	0.2375

Note: Numbers in parentheses are *p*-values.

Table 4. SYS-GMM Results for Disaggregated Income Groups of Countries.

Variables	Low income	Middle income	High income
Lagged growth rate	0.9638 (0.00001)	0.8754 (0.00001)	0.9834 (0.00001)
Tourism specialization	0.0013 (0.00775)	0.0354 (0.00001)	0.0259 (0.00001)
Investment	0.0014 (0.00103)	0.0028 (0.32563)	0.0017 (0.00001)
Government consumption	-0.0017 (0.30121)	-0.0025 (0.00901)	-0.0027 (0.24690)
Inflation	-0.0003 (0.43134)	-0.0004 (0.52805)	-0.0003 (0.00592)
Population growth	-0.0021 (0.14111)	-0.0023 (0.00741)	-0.0109 (0.66067)
Secondary education	0.0005 (0.00423)	0.0030 (0.00818)	0.0001 (0.27734)
Trade	0.0002 (0.17046)	0.0004 (0.56747)	0.0002 (0.00001)
Political stability and absence of violence/terrorism	0.0001 (0.01836)	0.0488 (0.21177)	0.0024 (0.35598)
Financial depth	-0.0002 (0.36978)	0.0003 (0.71065)	0.0002 (0.00001)
Corr. (y, fitted y)^2	0.2745	0.2398	0.2952

Note: Numbers in parentheses are *p*-values.

Table 5. SYS-GMM Results by Income Groups with Alternative Tourism Specialization Measure.

Variables	Low income	Middle income	High income
Lagged growth rate	0.9426 (0.00001)	0.9535 (0.00001)	0.9990 (0.00001)
Tourism specialization (tourism expenditure as a percentage of GDP)	0.0021 (0.00007)	0.0499 (0.00001)	0.0286 (0.00001)
Investment	0.0014 (0.00030)	0.0038 (0.17301)	0.0016 (0.00001)
Government consumption	-0.0007 (0.05113)	-0.0005 (0.00599)	-0.0016 (0.28601)
Inflation	-0.0001 (0.62487)	-0.0028 (0.30256)	-0.0003 (0.00009)
Population growth	-0.0029 (0.12710)	-0.0043 (0.00292)	-0.0172 (0.58097)
Secondary education	0.0005 (0.00133)	0.0036 (0.00113)	0.0001 (0.20193)
Trade	0.0001 (0.32102)	0.0008 (0.24368)	0.0001 (0.00001)
Political stability and absence of violence/terrorism	0.0057 (0.03263)	0.0572 (0.11575)	0.0029 (0.16421)
Financial depth	-0.0001 (0.54323)	0.0002 (0.34832)	0.0003 (0.00001)
Corr. (y, fitted y)^2	0.2896	0.2631	0.2973

Note: Numbers in parentheses are p-values.

Table 6. SYS-GMM Results with Squared Specialization for Disaggregated Financial Development Groups of Countries.

Variables	Low financial absorptive capacity	High financial absorptive capacity
Lagged growth rate	0.9568 (0.00001)	0.9977 (0.00001)
Tourism specialization	0.0381 (0.54346)	0.0962 (0.00169)
Tourism specialization squared	0.0001 (0.49677)	-0.0045 (0.00682)
Investment	0.0015 (0.54965)	0.0020 (0.00001)
Government consumption	-0.0012 (0.02409)	-0.0004 (0.69211)
Inflation	-0.0005 (0.44847)	-0.0006 (0.00002)
Population growth	-0.0638 (0.56058)	-0.0090 (0.00356)
Secondary education	0.0029 (0.00554)	0.0000 (0.72417)
Trade	0.0002 (0.71915)	0.0001 (0.00001)
Political stability and absence of violence/terrorism	0.0466 (0.09752)	0.0054 (0.00152)
Financial depth	-0.0002 (0.71661)	0.0003 (0.00001)
Corr. (y, fitted y)^2	0.2512	0.3029

Note: Numbers in parentheses are *p*-values.